What is claimed is:

1. A hydrolyzing/dehydration condensing enzyme having the following physical and chemical properties (1) to (3):

(1) function and substrate specificity: the enzyme catalyzes a hydrolyzing or dehydration condensing reaction of an amide bond;

(2) an optimal temperature range of about 55°C; and

(3) an optimal pH range of 6-8.

2. A hydrolyzing/dehydration condensing enzyme according to claim 1, which is an enzyme originated from a microorganism belonging to a Streptomyces genus.

3. A hydrolyzing/dehydration condensing enzyme according to claim 2, wherein the microorganism belonging to the Streptomyces genus is a Streptomyces mobaraensis IFO 13819 or a Streptomyces luteoreticuli IFO 13422.

4. A method for producing a hydrolyzing/dehydration condensing enzyme, which comprises the steps of incubating a microorganism belonging to a Streptomyces genus and having an ability of producing an enzyme for hydrolyzing/dehydration condensing an amide bond, and collecting the hydrolyzing/dehydration condensing enzyme from a culture thereof.

5. The method according to claim 4, wherein the microorganism is a Streptomyces mobaraensis IFO 13819 or a Streptomyces luteoreticuli IFO 13422.

6. A method for synthesizing an amide, which comprises the step of reacting an amine with a fatty acid in a solvent in the presence of an enzyme as claimed in any one of claims 1 to 3.

7. The method according to claim 6, wherein the solvent is at least one selected from the group consisting of a water soluble solvent such as glycerin, ethanol or acetonitrile, a water hardly soluble organic solvent such as hexane, higher alcohol or acetic ether and a mixed solution thereof.

8. A method for hydrolysis, which comprises hydrolyzing an amide to an amine and a fatty acid in the presence of an enzyme as claimed in any one of claims 1 to 3.

9. The method according to claim 8, wherein the amide is at least one selected from the group consisting of N-acyl-L-amino acid, Nε-acyl-L-Lys, N-axyl-L-peptide, Nε-L-Lys-L-peptide, an antibiotic substance having an amide

bond, N-(benzyloxycarbonyl)-L-amino acid, capsaicin and derivatives thereof.